

I claim:

1. A capacitive sensor for sensing the level of a fluid in a vessel, without the use of a float, the fluid having a permittivity different from that of air, the sensor having at least two electrical conductors, the conductors forming a measured capacitance, the conductors attached to a substrate, the substrate and conductors together forming a sensing element, the conductors being electrically insulated from the fluid by a dielectric material, the sensing element positioned adjacent to the fluid and driven by an alternating current electrical signal, the conductors arranged on the substrate with a spacing such that the electric field produced around the conductors by the electrical signal penetrates the dielectric material and further penetrates a distance into the measured fluid, the distance of penetration being sufficient to cause a change in the measured capacitance in response to a change in the level of the measured fluid.
2. The sensor of claim 1, wherein the conductors are a set of parallel lines, interdigital combs, zigzag lines, sinusoidal lines, or meander lines.
3. The sensor of claim 2, wherein at least a portion of the dielectric material is positioned between the conductors;

a surface of the sensing element facing the fluid, at least a portion of the dielectric material between the conductors being shaped to form a depression or opening in the surface.
4. The sensor of claim 1, wherein the conductors form a flexible sensing element.

5. The sensor of claim 1, wherein the sensing element has a configuration enabling it to be cut to length.
6. The sensor of claim 1, wherein the sensing element has adhesive backing for mounting to a dielectric wall of a vessel.
7. The sensor of claim 1, wherein an electrically conductive material is positioned approximately parallel to the sensing element on the opposite side as the measured fluid, and connected to an electronic circuit or to ground.
8. The sensor of claim 1, wherein the sensing element is embedded into a dielectric wall of the vessel.
9. A capacitive sensor for sensing the level of a fluid outside of a device utilizing fluid level information, without the use of a float, the fluid having a permittivity different from that of air, the sensor having at least two electrical conductors comprising a sensing element and forming a measured capacitance, the conductors being electrically insulated from the fluid by a dielectric material, the sensing element positioned adjacent to the fluid and driven by an alternating current electrical signal, the conductors arranged with a spacing such that the electric field produced around the conductors by the electric signal penetrates the dielectric material and further penetrates a distance into the measured fluid that is sufficient to cause a change in the measured capacitance in response to a change in the level of the measured fluid, the sensing element embedded within a dielectric wall of the device.

10. The sensor of claim 9, wherein the conductors are shaped as a set of parallel lines, interdigital combs, zigzag lines, sinusoidal lines, or meander lines, at least a portion of the dielectric material is positioned between the conductors;
a surface of the sensing element facing the fluid, at least a portion of the dielectric material between the conductors being shaped to form a depression or opening in the surface.
11. The capacitive sensor of claim 9, wherein the device is a bilge pump.
12. A capacitive sensor for sensing the level of a fluid without the use of a float, the sensor comprising a sensing element and an electronic circuit module, the fluid having a permittivity different from that of air, the sensing element having at least two electrical conductors forming a measured capacitance, the conductors being electrically insulated from one another by spacing, the conductors positioned adjacent to the fluid so that a change in the level of the fluid causes a change in the measured capacitance, the spacing maintained by attaching the conductors to, or embedding them within, a dielectric material, the conductors being electrically insulated from the fluid by the dielectric material, the electronic circuit module electrically connected to said sensing element and providing a measurement of capacitance between the conductors, the electronic circuit module providing an output for the indication of the fluid level.
13. The capacitive sensor of claim 12, wherein the sensing element is embedded into a dielectric wall of a device that utilizes fluid level information.
14. The capacitive sensor of claim 13, wherein the device is a bilge pump.

15. The capacitive sensor of claim 12, wherein the dielectric material is a wall of a fluid vessel.
16. The capacitive sensor of claim 12, wherein the vessel is a waste tank.